BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION MO/2023)

CLASS: BTECH **SEMESTER : Vth**
BRANCH: ALL(O.E.) **SESSION : MO/2023**

SUBJECT: EC321 INTRODUCTION TO COMMUNICATION SYSTEM

TIME: 02 Hours **FULL MARKS: 25**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 5 marks and total 25 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4*. Tables/Data handbook/Graph paper etc., if applicable, will be supplied to the candidates**

			CO	BL
Q.1(a)	Why Modulation is backbone of communication system. Discuss its significance and types.	[2]	1	3
Q.1(b)	Discuss the working and derive respective expressions for coherent SSB-SC detection.	[3]	1	4
Q.2(a)	Differentiate between AM, DSB-SC AM and SSB-SC AM.	[2]	1	3
Q.2(b)	A composite signal of three different sinusoidal signals have their respective individual modulation index is 60%, 75% and 80%. Determine the total power required to transmit the composite signal in AM if carrier power is 650 Watts. Also find percentage saving in power if it transmitted through SSB-SC scheme.	[3]	1	4
Q.3(a)	For a satellite TV channel having a SNR of 20 dB and a video bandwidth of 10 MHz. Calculate maximum data rate. Also find percentage increment in data rate if SNR boost to 50dB.	[2]	1	4
Q.3(b)	What do you mean by angle modulated wave? Discuss difference properties for the same.	[3]	2	3
Q.4(a)	Determine the permissible range in maximum modulation index for commercial FM having a modulating frequency from 30 Hz to 15 KHz modulating frequencies. Consider frequencies deviation to be 75 KHz.	[2]	2	4
Q.4(b)	Discuss working of Reactance modulator using Hartley Oscillator.	[3]	2	3
Q.5(a)	Discuss the difference between NBFM and WBFM.	[2]	2	3
Q.5(b)	Discuss working of Foster Seeley phase discriminator with neat diagram.	[3]	2	4

:::::29/09/2023 M:::::